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GOETHE'S RHAPSODY ON NATURE.[1]

(About the year 1780.)

TRANSLATED BY ΞΡΣ.

Nature! We are by her surrounded and encompassed—unable to step out of her and unable to enter deeper into her. Unsolicited and unwarned, she receives us into the circuit of her dance, and hurries along with us, till we are exhausted and drop out of her arms.

She creates ever new forms; what now is was never before; what was, comes not again—all is new, and yet always the old.

We live in her midst, and are strangers to her. She speaks with us incessantly, and betrays not her mystery to us. We affect her constantly, and yet have no power over her.

She seems to have contrived everything for individuality, but cares nothing for individuals. She builds ever and destroys ever, and her workshop is inaccessible.

She lives in children alone; and the mother, where is she? She is the only artist: from the simplest subject to the greatest contrasts; without apparent effort to the greatest perfection, to the precisest exactness—always covered with something gentle. Every one of her works has a being of its own, every one of her phenomena has the most isolated idea, and yet they all make one.

She acts a play on the stage: whether she sees it herself we know not, and yet she plays it for us who stand in the corner.

There is an eternal living, becoming, and moving in her, and yet she proceeds not farther. She transforms herself forever, and there is no moment of standing still in her. Of remaining in a spot she does not think, and she attaches her curse upon standing still. She is firm; her step is measured, her exceptions rare, her laws unalterable.

She has thought, and is constantly meditating; not as a man, but as nature. She has an all-embracing mind of her own, and no one can penetrate it.

Men are all in her, and she is in all. With all she carries on a friendly game, and rejoices the more they win from her. She plays it with many so secretly, that she plays it to the end ere they know it.

The most unnatural is also nature; *even the stupidest Philistinism hath something of her genius.* Who sees her not everywhere, sees her nowhere aright.

She loves herself, and clings ever, with eyes and hearts without number to herself. She has divided herself in pieces in order to enjoy herself. Ever she lets new enjoyers grow, insatiable to impart herself.

She delights in illusion. Whoever destroys this in himself and others, him she punishes as the strictest tyrant. Whoever trustfully follows her, him she presses like a child to her heart.

Her children are without number. To no one is she altogether niggardly, but she has favorites upon whom she squanders much, and to whom she sacrifices much. To greatness she has pledged her protection.

She flings forth her creatures out of nothing, and tells them not whence they come, nor whither they are going. Let them only run; *she* knows the way.

She has few springs, but those are never worn out, always active, always manifold.

Her play is ever new, because she ever creates new spectators. Life is her finest invention, and death is her artifice to get more life.

She veils man in darkness, and spurs him continually to the light. She makes him dependent on the earth, dull and heavy, and keeps rousing him afresh.

She gives wants, because she loves motion. The wonder is that she accomplishes all this motion with so little. Every want is a benefit; quickly satisfied, quickly growing again. If she gives one more, it is a new source of pleasure; but she soon comes into equilibrium.

She sets out every moment for the longest race, and is every moment at the goal.

She is vanity itself, but not for us, to whom she has made herself of the greatest weight.

She lets every child tinker upon her, every fool pass judgment on her, thousands stumble over her and see nothing; and she has her joy in all, and she finds in all her account.

Man obeys her laws, even when he strives against

[1] The readers of *The Open Court* are indebted for the publication of Goethe's rhapsody on Nature to Mr. T. B. Wakeman, who has called the Editor's attention to this gem of philosophic poetry.

them; he works *with* her even when he would work *against* her.

She makes of all she gives a blessing, for she first makes it indispensable. She lags, that we may long for her; she hastens, that we may not grow weary of her.

She has no speech nor language; but she creates tongues and hearts through which she feels and speaks.

Her crown is love. Only through it can one come near her. She creates gaps between all beings, and is always ready to engulf all. She has isolated all, to draw all together. By a few draughts from the cup of love she makes up for a life full of trouble.

She is all. She rewards herself and punishes herself, delights and torments herself. She is rude and gentle, lovely and terrible, powerless and almighty.

All is always *now* in her. Past and future knows she not. The present is her eternity.

She is kindly. I praise her with all her works. She is wise and quiet. One can tear no explanation from her, extort from her no gift, which she gives not of her own free will. She is cunning, but for a good end, and it is best not to observe her cunning.

She is whole, and yet ever uncompleted. As she plies it, she can always ply it.

To every one she appears in a form of her own. She hides herself in a thousand names and terms, and is always the same.

She has placed me here, she will lead me away. I trust myself to her. She may manage it with me. She will not hate her work. It is not I who spake of her. No, both the true as well as the false, she has spoken it all. All the guilt is hers, all the merit hers.

ON THE CAUSES OF HARMONY.

A POPULAR SCIENTIFIC LECTURE.[1]

BY PROF. ERNST MACH.

We are to speak to-day of a theme which is perhaps of somewhat more general interest—*the causes of the harmony of musical sounds*. The first and simplest experiences relative to harmony are very ancient. Not so the explanation of its laws. These were first supplied by the investigators of a recent epoch. Allow me an historical retrospect.

Pythagoras (586 B. C.) knew that the note yielded by a string of steady tension was converted into its octave when the length of the string was reduced one-half, and into its fifth when reduced two-thirds; and that then the first fundamental tone was consonant with the two others. He knew generally that the same string under fixed tension gives consonant tones when successively divided into lengths that are in the proportions of the simplest natural numbers; that is, in the proportions of 1:2, 2:3, 3:4, 4:5.

1 Graz, 1865. Translated by μκρκ.

Pythagoras failed to reveal the causes of these laws. What have consonant tones to do with the simple natural numbers? That is the question we should ask to-day. But this circumstance must have appeared less strange than inexplicable to Pythagoras. This philosopher sought for the causes of harmony in the occult, miraculous powers of numbers. His procedure was largely the cause of the upgrowth of a numerical mysticism, of which the traces may still be detected in our oneirocritical books, and with some scientists, to whom marvels are more attractive than lucidity.

Euclid (300 B. C.) gives a definition of consonance and dissonance that could hardly be improved upon, in point of verbal accuracy. The consonance (*συμφωνία*) of two tones, he says, is the mixture, the blending (*κρᾶσις*) of those two tones; dissonance (*διαφωνία*), on the other hand, is the incapacity of the tones to blend (*ἀμιξία*), whereby they are made harsh for the ear. The person who knows the correct explanation of the phenomenon hears it, so to speak, reverberated in these words of Euclid. Still, Euclid did not know the true cause of harmony. He had unwittingly come very near to the truth, but without really grasping it.

Leibnitz (1646–1716 A. D.) resumed the question which his predecessors had left unsolved. He, of course, knew that musical notes were produced by vibrations, that twice as many vibrations corresponded to the octave as to the fundamental tone, etc. A passionate lover of mathematics, he sought for the cause of harmony in the secret computation and comparison of the simple numbers of vibrations and in the secret satisfaction of the soul at this occupation. But how, we ask, if one does not know that musical notes are vibrations? The computation and the satisfaction at the computation must indeed be pretty secret if it is unknown. What queer ideas philosophers have! Could anything more wearisome be imagined than computation as a principle of æsthetics? Yes, you are not utterly wrong in your conjecture, yet you may be sure that Leibnitz's theory is not wholly nonsense, although it is difficult to make out precisely what he meant by his secret computation.

The great Euler (1707–1783) sought the cause of harmony, almost as Leibnitz did, in the pleasure which the soul derives from the contemplation of order in the numbers of the vibrations.[1]

Rameau and D'Alembert (1717–1783) approached nearer to the truth. They knew that in every sound available in music besides the fundamental note also the twelfth and the next higher third could be heard; and further that the resemblance between a fundamen-

1 Sauveur also set out from Leibnitz's idea, but arrived by independent researches at a different theory, which was very near to that of Helmholtz. Compare on this point Sauveur, *Mémoires de l'Academie des Sciences*, Paris, 1700–1705, and R. Smith, *Harmonics*, Cambridge, 1749.

tal tone and its octave was always exceptionally marked. Accordingly, the combination of the octave, fifth, third, etc., with the fundamental tone appeared to them "natural." They possessed, we must admit, the correct point of view; but with the simple naturalness of a phenomenon no inquirer can rest content; for it is precisely this naturalness for which he seeks his explanations.

Rameau's remark dragged along through the whole modern period, yet without leading to the full discovery of the truth. Marx places it at the head of his theory of composition, but makes no further application of it. Also Goethe and Zelter in their correspondence were, so to speak, on the brink of the truth. Zelter knew of Rameau's view. Finally, you will be appalled at the difficulty of the problem, when I tell you that till very recent times even professors of physics preserved silence when asked for the causes of harmony.

Not till quite recently did Helmholtz find the solution of the question. But to make this solution clear to you I must first speak of some experimental principles of physics and psychology.

1) In every process of perception, in every observation, the attention plays a highly important part. We need not look about us long for proofs of this. You receive, for example, a letter written in a very poor hand. Do your best, you cannot make it out. You put together now these, now those lines, yet you cannot construct from them a single intelligible character. Not until you direct your attention to groups of lines which really belong together, is the reading of the letter possible. Manuscripts, the letters of which are formed of minute figures and scrolls can only be read at a considerable distance, where the attention is no longer diverted from the significant outlines to the details. A beautiful example of this class is furnished by the famous iconographs of Giuseppe Arcimboldo in the basement of the Belvedere gallery at Vienna. These are symbolic representations of water, fire, etc.: human heads composed of aquatic animals and of combustibles. At a short distance one sees only the details, at a greater distance only the whole figure. Yet a point can be easily found at which, by a simple voluntary movement of the attention, there is no difficulty in seeing now the whole figure and now the smaller forms of which it is composed. A picture is often seen representing the tomb of Napoleon. The tomb is surrounded by dark trees between which the bright heavens are visible as background. One can look a long time at this picture without noticing anything except the trees, but suddenly, on the attention being accidentally directed to the bright background, one sees the figure of Napoleon between the trees. This case shows us most distinctly the important part which attention plays. The same sensuous object can, solely by the interposition of attention, give rise to wholly different perceptions.

If I strike a harmony, or chord, on this piano, by a mere effort of attention you can fix every tone of that harmony. You then hear most distinctly the fixed tone, and all the rest appear as a mere addition, altering only the quality, or acoustic color, of the primary tone. The effect of the same harmony is essentially modified if we direct our attention to different tones.

Strike in succession two harmonies, for example, the two represented in the annexed diagram, and first fix by the attention the upper note *e*, afterwards the base *e—a*; in the two cases you will hear the same sequence of harmonies differently. In the first case, you have the impression as if the fixed tone remained unchanged and simply altered its *timbre*; in the second case, the whole acoustic agglomeration seems to fall sensibly in depth. There is an art of composition to guide the attention of the hearer. But there is also an art of hearing, which is not the gift of every person.

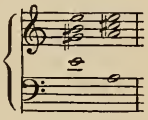

Fig. 1.

The piano-player knows the remarkable effects obtained when one of the keys of a chord that is struck is let loose. Bar 1 played on the piano sounds almost like bar 2. The note which lies next to the key let

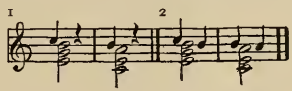

Fig. 2.

loose resounds after its release as if it were freshly struck. The attention no longer occupied with the upper note is by that very fact insensibly led to the upper note.

Any tolerably cultivated musical ear can perform the resolution of a harmony into its component parts. By much practice we can go even further. Then, every musical sound heretofore regarded as simple can be resolved into a subordinate succession of musical tones. For example, if I strike on the piano the note 1, (annexed diagram,) we shall hear, if we make the requisite effort of attention, besides the loud fundamental note the feebler, higher overtones, or harmonics, 2 . . . . 7, that is, the octave, the twelfth, the double octave, and the third, the fifth, and the seventh of the double octave.

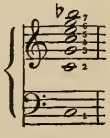

Fig. 3.

The same is true of every musically available sound. Each yields, with varying degrees of intensity, besides its fundamental note, also the octave, the

twelfth, the double octave, etc. The phenomenon is observable with special facility on the open and closed flue-pipes of organs. According, now, as certain overtones are more or less distinctly emphasised in a sound, the *timbre* of the sound changes—that peculiar quality of the sound by which we distinguish the music of the piano from that of the violin, the clarinet, etc.

On the piano these overtones may be rendered very easily audible. If I strike, for example, sharply note 1 of the foregoing series, whilst I simply hold one after another the keys 2, 3, ... 7, the notes 2, 3, ... 7 will continue to sound after the striking of 1, because the strings corresponding to these notes, now freed from their dampers, are thrown into sympathetic vibration.

As you know, this sympathetic vibration of the like-pitched strings with the overtones is really not to be conceived as sympathy, but rather as lifeless mechanical necessity. We must not think of this sympathetic vibration as an ingenious journalist pictured it, who tells a gruesome story of Beethoven's F minor sonata, Op. 2, that I cannot withhold from you. "At the last London Industrial Exhibition nineteen virtuosos played the F minor sonata on the same piano. When the twentieth stepped up to the instrument to play by way of variation the same production, to the terror of all present the piano began to render the sonata of its own accord. The Archbishop of Canterbury, who happened to be present, was set to work and forthwith expelled the F minor devil."

Although, now, the overtones or harmonics which we have discussed are heard only upon a special effort of the attention, nevertheless they play a highly important part in the formation of musical *timbre*, as also in the production of the consonance and dissonance of sounds. This may strike you as singular. How can a thing which is heard only under exceptional circumstances be of importance generally for audition?

But consider some familiar incidents of your every-day life. Think of how many things you see which you do not notice, which never strike your attention until they are missing. A friend calls upon you; you cannot understand why he looks so changed. Not until you make a close examination do you discover that his hair has been cut. It is not difficult to tell the publisher of a work from its letter-press, and yet no one can state precisely the points by which this style of type is so strikingly different from that style. I have often recognised a book which I was in search of from a simple piece of unprinted white paper that peeped out from underneath the heap of books covering it, and yet I had never carefully examined the paper, nor could I have stated its difference from other papers.

What we must remember, therefore, is that every sound that is musically available yields, besides its fundamental note, its octave, its twelfth, its double octave, etc., as overtones or harmonics, and that these are important for the agreeable combination of several musical sounds.

2) One other fact still remains to be dealt with. Look at this tuning-fork. It yields, when struck, a perfectly smooth tone. But if you strike in company with it a second fork which is of slightly different pitch, and which alone also gives a perfectly smooth tone, you will hear, if you set both forks on the table, or hold both before your ear, a uniform tone no longer, but a number of shocks of tones. The rapidity of the shocks increases with the difference of the pitch of the forks. These shocks, which become very disagreeable for the ear when they amount to thirty-three in a second, are called "beats."

Always, when one of two like musical sounds is thrown out of unison with the other, beats arise. Their number increases with the divergence from unison, and simultaneously they grow more unpleasant. Their roughness reaches its maximum at about thirty-three beats in a second. On a still further departure from unison, and a consequent increase of the number of beats, the unpleasant effect is diminished, so that tones which are widely apart in pitch no longer produce offensive beats.

To give yourselves a clear idea of the production of beats, take two metronomes and set them almost alike. You can, for that matter, set the two exactly alike. You need not fear that they will strike alike. The metronomes usually for sale in the shops are poor enough to yield, when set alike, appreciably unequal strokes. Set, now, these two metronomes, which strike at unequal intervals, in motion; you will readily see that their strokes alternately coincide and fall out with each other. The alternation is quicker the greater the difference of time of the two metronomes.

If metronomes are not to be had, the experiment can be performed with two watches.

Beats arise just in this way. The rhythmical shocks of two sounding bodies, of unequal pitch, sometimes coincide, sometimes interfere, whereby they alternately augment and enfeeble each other's effects. Hence the shock-like, unpleasant swelling of the tone.

Now that we have made ourselves acquainted with overtones and beats, we may proceed to the answer of our main question, Why do certain relations of pitch produce pleasant sounds, consonances, others unpleasant sounds, dissonances? It will be readily seen that all the unpleasant effects of simultaneous sound-combinations are the result of beats produced by those combinations. Beats are the only sin, the sole evil of music. Consonance is the coalescence of sounds without appreciable beats.

To make this perfectly clear to you I have constructed the model which you see in Fig. 4. It represents a claviatur. At its top a movable strip of wood *aa* with the marks 1, 2 . . . . 6 is placed. By setting this strip in any position, for example, in that where the

Fig. 4.

mark 1 is over the note *c* of the claviatur, the marks 2, 3 . . . . 6, as you see, stand over the overtones of *c*. The same happens when the strip is placed in any other position. A second, exactly similiar strip, *bb*, possesses the same properties. Thus, together, the two strips, in any two positions, point out by their marks all the tones brought into play upon the simultaneous sounding of the notes indicated by the marks 1.

The two strips, placed over the same fundamental note, show that also all the overtones of those notes coincide. The first note is simply intensified by the other. The single overtones of a sound lie too far apart to permit appreciable beats. The second sound supplies nothing new, consequently, also, no new beats. Unison is the most perfect consonance.

Moving one of the two strips along the other is equivalent to a departure from unison. All the overtones of the one sound now fall alongside those of the other; beats are at once produced; the combination of the tones becomes unpleasant: we obtain a dissonance. If we move the strip further and further along, we shall find that as a general rule the overtones always fall alongside each other, that is, always produce beats and dissonances. Only in a few quite definite positions do the overtones partially coincide. Such positions, therefore, signify higher degrees of euphony —they point out *the consonant intervals*.

These consonant intervals can be readily found experimentally by cutting Fig. 4 out of paper and moving *bb* lengthwise along *aa*. The most perfect consonances are the octave and the twelfth, since in these two cases the overtones of the one sound coincide absolutely with those of the other. In the octave, for example, 1 *b* falls on 2 *a*, 2 *b* on 4 *a*, 3 *b* on 6 *a*. Consonances, therefore, are simultaneous sound-combinations not accompanied by disagreeable beats. This, by the way, is, expressed in English, what Euclid said in Greek.

Only such sounds are consonant as possess in common some portion of their partial tones. Plainly we must recognise between such sounds, also when struck one after another, a certain affinity. For the second sound, by virtue of the common overtones, will produce partly the same sensation as the first. The octave is the most striking exemplification of this. When we reach the octave in the ascent of the scale we actually fancy we hear the fundamental tone repeated. The foundations of harmony, therefore, are the foundations of melody.

Consonance is the coalescence of sounds without appreciable beats! This principle is competent to introduce wonderful order and logic into the doctrines of the fundamental bass. The compendiums of the theory of harmony which (Heaven be witness!) have stood hitherto little behind the cook-books in subtlety of logic, are rendered extraordinarily clear and simple. And what is more, all that the great masters, such as Palestrina, Mozart, Beethoven, unconsciously got right, and of which heretofore no text-book could render just account, receives from the preceding principle its perfect verification.

But the beauty of the theory is, that it bears upon its face the stamp of truth. It is no phantom of the brain. Every musician can hear for himself the beats which the overtones of his musical sounds produce. Every musician can satisfy himself that for any given case the number and the harshness of the beats can be calculated beforehand, and that they occur in exactly the measure that theory determines.

This is the answer which Helmholtz gave to the question of Pythagoras, so far as it can be explained with the means now at my command. A long period of time lies between the raising and the solving of this question. More than once were eminent inquirers nearer to the answer than they dreamed of.

The inquirer seeks the truth. I do not know if the truth seeks the inquirer. But were that so, then the history of science would vividly remind us of that classical rendezvous, so often immortalised by painters and poets. A high garden wall. At the right a youth, at the left a maiden. The youth sighs, the maiden sighs! Both wait. Neither dreams how near the other is.

I like the simile. Truth suffers herself to be courted, but she has apparently no desire to be won. She flirts at times disgracefully. Above all, she is determined to be merited, and has naught but contempt for the man who will win her too quickly. And if, forsooth, one breaks his head in his efforts of conquest, what matter is it, another will come, and truth is always young. At times, indeed, it really seems as if she were well disposed towards her admirer, but that admitted—never! Only when Truth is in exceptionally good spirits does she bestow upon her wooer a glance of encouragement. For, Truth thinks, if I do not do something, in the end the fellow will not seek me at all.

This one fragment of truth, then, we have, and it shall never escape us. But when I reflect what it has cost in labor and in the lives of thinking men, how it painfully groped its way through centuries, a half-

matured thought, before it became complete; when I reflect that it is the toil of more than two thousand years that speaks out of this unobtrusive model of mine, then, without dissimulation, I almost repent me of the jest I have made.

And think of how much we still lack! When, several thousand years hence, boots, top-hats, hoops, pianos, and bass-viols are dug out of the earth, out of the newest alluvium as fossils of the nineteenth century; when the scientists of that time shall pursue their studies both upon these wonderful structures and upon our modern Broadways, as we to-day make studies of the implements of the stone age and of the prehistoric lake-dwellings—then, too, perhaps, people will be unable to comprehend how we could come so near to many great truths without grasping them. And thus it is for all time the unsolved dissonance, for all time the troublesome seventh, that everywhere resounds in our ears; we feel, perhaps, that it will find its solution, but we shall never live to see the day of the pure triple accord, nor shall our remotest descendants.

Ladies, if it is the sweet purpose of your life to sow confusion, it is the purpose of mine to be clear; and so I must confess to you a slight transgression that I have been guilty of. On one point I have told you an untruth. But you will pardon me this falsehood, if in full repentance I make it good. The model represented in Fig. 4 does not tell the whole truth, for it is based upon the so-called "even temperament" system of tuning. The overtones, however, of musical sounds are not tempered, but purely tuned. By means of this slight inexactness the model is made considerably simpler. In this form it is fully adequate for ordinary purposes, and no one who makes use of it in his studies need be in fear of appreciable error.

If you should demand of me, however, the full truth, I could give you that only by the help of a mathematical formula. I should have to take the chalk into my hands and—think of it!—reckon in your presence. This you might take amiss. Nor shall it happen. I have resolved to do no more reckoning for to-day. I shall reckon now only upon your forbearance, and this you will surely not gainsay me when you reflect that I have made only a limited use of my privilege to weary you. I could have taken up much more of your time, and may, therefore, justly close with Lessing's epigram:

"If thou hast found in all these pages naught that's worth the thanks,
At least have gratitude for what I've spared thee."

TRAVELLING DURING A RAILROAD STRIKE.

THERE seems to be no end of strikes. The coal-miner's strike is scarcely over and the Pullman works still lie idle as if forever dead, when suddenly all the railroads of the country are threatened with a general strike under the auspices of the American Railway Union. The movement began with the stoppage of the trains of the Illinois Central Railroad but spread rapidly over the other roads, and soon gained such dimensions that almost all traffic in Chicago is paralysed, the milk supply is partly interrupted, ice begins to be scarce, thus making it impossible to keep meat fresh, and travelling has become dangerous.

Having attended to some business in Chicago, I thought I had better go home since my road was not yet affected, and went to the Rock Island depot where the train was due at 3:30 P. M. The train was not as yet made up, and a great number of passengers were eagerly discussing the probabilities of their fate. Will the train run? Will it be stopped by the strikers? Anyway, a person not compelled to travel had better stay home, for the train may be derailed. There are Pullman cars in the train. But then the train carries mail and the strikers will be careful not to interfere with the United States mail. Mobs may assault the train. Nevertheless, the passengers need not fear, for the strike is directed against the road, not against the public.

Such were the thoughts and sentiments expressed. Having waited about half an hour the cars came rolling into the depot and the public rushed through the gate where they had to show their tickets. "Have your ticket ready," I overheard some one say, "the man at the gate is sometimes very impolite and treats the public as an overseer in the penitentiary treats criminals under his control." An acquaintance of mine, standing at my side, added, "the American public is very patient. We love liberty in name only but we suffer the most outrageous oppression by big corporations." Mark Twain's article "Travelling with a Reformer," had no effect upon the managers of our roads. On entering this gate we have to leave our citizen's rights behind and must submit to the sweet will of the company.

The train was overcrowded; all the seats were taken and all the aisles filled. The heat was oppressive; yet we had to endure it, and the train stood there for another half an hour. Newcomers crowded the room still more and spread discouraging rumors as to the condition of things in the suburbs. All trains are stopped, it was said, and the engineers and firemen are induced to join the strike. It is a bare possibility that the train will run, but we have to take our chances. Another half hour passed and many people left the car. I might have done so too, but the rain poured in torrents and I thought, this may be the last train.

At last the train started, but it returned at once into the depot and was switched upon another track. There we stood again and waited. The time had come for the next train, which was an accommodation train to run on the same line, and both trains were merged into one. Many passengers deserted the train but new ones took their seats, and we were overcrowded as before. Among the travellers were not only young men bound for their Sunday excursion, but also families going west and mothers with babies.

Now the train actually started; it took us more than double the usual time to pass through the city, for the engineer had to look out to avoid danger; yet we reached Englewood and passed unmolested out of the city limits. A gentleman from Blue Island had his seat beside me and he said, "there will be trouble in Blue Island, for the strikers are very powerful there and a mob of toughs is always ready to swell their numbers wherever they are bent on mischief."

We approached Blue Island, the speed of the train slackened, when suddenly we felt a jerk that shook us all in our seats, followed by another jerk, as though the train were thrown off the rails, and there we stood still. Some passengers left the cars to see what was the matter. The engine stood toppling over, with one front wheel upon the right branch of the switch, the other front wheel buried a foot deep in the ground, while the hind wheels of the tender were touching the rails of the left branch. The pivots of the tender were broken, and big splinters of wood testified to the vehemence with which it had collided with the engine. The engineer must have had an uncomfortable moment while the

engine was thrown over under his feet and wildly shaken, and no doubt he had a narrow escape. He might have been crushed by the intruding tender, and if the boiler had been injured what a terrible death of being scorched alive!

How did it all happen? An infamous switchman had turned the switch at the last moment, and the yardmaster tried in vain to prevent him. But the felon succeeded in pulling the switch half open, and the engine was wrecked. Happily the engineer had been on his guard. Observing the struggle in the switch-tower, he reversed the engine and applied at the same time with all force the air-brakes. His circumspection apparently had saved hundreds of lives. If the train had had a little more speed the front cars would have unfailingly been thrown upon the wrecked engine and would have been crushed under the weight of the following cars. Had the engine run at full speed, the whole train would have been piled up in a twinkle in a heap of ruins.

It was still raining, but the passengers went out to witness the work of destruction. The author of the wreck had no chance of escaping from the switch-tower, and was at once taken into custody and put in jail. The rain still continued; still there were plenty of strikers present, all elated at the great accomplishment which successfully blockaded the whole line.

In the meantime the roadmaster was placed under arrest by the local authorities of Blue Island for obstructing the crossing by the wrecked train, and had to be bailed out.

Other trains came and ranged behind us and on side-tracks. The strikers roamed over the yard of the road, talking, laughing, and sometimes cheering. Some of the passengers thought it was good fun, others looked rather discomforted, but all their inquiries as to our further progress west or return to the city were regularly answered by the officials of the road with a shrug and "I do not know; we wait for orders." With some acquaintances of mine I went out and mingled with the crowd. There were roughs among them, and their remarks were not pleasant. Their general drift was: If a railroad strike is ordered, no one has any business to travel. Besides, travelling is a privilege of the rich. A little discomfiture will serve them right. The engineer, a tall and strongly built man, left his engine with regret. It was the best engine on the road, and tears were in his eyes when he saw some parts broken, some bent; it is true they were but slightly bent, but they were beyond hope of mending. "My poor ninety-four!" he said; this was the number of the engine. "I ran it since I worked on the road." One of the crowd standing by and spitting tobacco-juice on the ground, said: "The d—— fool! He can get another machine!"

The public behaved, upon the whole, indifferently. Without either indorsing or condemning their opinions, I will tell what I heard them say. They railed at Pullman and at the road; but their remarks about the strikers were made with more discretion, or in secrecy, for disturbances of the peace had taken place, and it was advisable not to provoke a riot. Pullman was denounced for his greed and interference with the liberty of his people, as he did not allow them to choose their residences for themselves. It was urged by some among the public that the strike had no rhyme nor reason, because Pullman did not directly suffer by the tactics of the A. R. U., but only the roads and the public. The roads have to fulfil their part of the contract, whether they run Pullman cars or not. "Well," it was said, "it will hurt Pullman at any rate, for they will not renew their contracts." Some one added: "Yet why should others suffer because the A. R. U. have a spite against one man?" "True, but then the main sufferers are the roads, and the roads have little sympathy with the public." One could hear all the old grudges which the public had against them.

"This road," I heard some one say, "is distinguished by a peculiar narrowness in its management. They do not care for the comfort of the public." A gentleman who said with the assurance of one who was conscious of being well informed: "Gruff conductors have the best chance of promotion, while gentlemanly men, who treat the public decently, find little consideration. One of their best men was dismissed on a baseless charge, and a unanimous petition of his comrades was ignored. The man was married, and succumbed to the worries to which he was exposed. He fell sick and died." "Of course," suggested another passenger, "we ought to hear both sides of the case." Protesting that matters were as stated, the former passenger continued: "And why is this road so reluctant in giving reduced rates? They ought to have shown some consideration for the public during the World's Fair. It is their duty to consider the wants of the public, for roads are franchises, and the holders of these franchises must not forget that they are public institutions intrusted to their care. There are other roads which are more obliging to the public, working also in good harmony with their men. The managers of some of the roads act exactly as if they wished to make themselves obnoxious to the public at large; no wonder that the public has no sympathy with their occasional losses by strikes." "By the bye," remarked an elderly gentleman, "if the roads introduced cheap rates they would enjoy a greater prosperity. From a mere business consideration they should endeavor to accommodate the public."

Listening to the indignation thus openly vented against the management of the roads, one might have thought the public in full sympathy with the strikers. But they were not. Many were very bitter against the leader of the strike, who, dictator-like, assumed the power to cripple trade and commerce, and to marshal the men to quit their work, even against their will, by moral persuasion, as it is called; but everybody knows what is meant by "moral persuasion." "It is true," someone said, "that the president of the A. R. U. forbids violence and cautions his men not to meddle with the United States mails. Nevertheless, it is done; and so far the strike has been successful only through the derailment of trains and other lawless acts, and the leader of the strike must know it."

There was another opinion given by a business man. "The strike has ceased to be a war between the A. R. U. and Mr. Pullman, it is waged at society at large and involves everybody who does not join the strikers. Hundreds of businesses are heedlessly ruined, babies have no milk, food becomes dear, men are forced out of work; the enforced idleness degenerates the character of the laborer. We may have a famine among the unemployed and crimes will rapidly increase. And the lessened demand will create a lesser demand for work. Times are hard anyhow. It is the worst time to strike and strikes will only help to reduce wages. Those who in the end will suffer most by the increased hardships of the times are after all the laborers."

"I am certainly in sympathy with every one who toils for his daily bread, but the laborer is not the only toiler in this world entitled to our sympathy, and if the strikers continue to act with such brutal egotism, trampling under foot all equity, they will at once lose the public sympathy which they still enjoy."

There was a German gentleman among the passengers who remarked that such a situation would be impossible in the old country. "There is no government here," he said, "and anarchy prevails as in the Middle Ages when every member of the Empire was allowed to wage war on his neighbors" "True," said another German, "but the consequence is that the government is hated and is looked upon by the mass of the people as tyrannous. The late riot in Cassel proves how strong the public sentiment is against the authorities who enforce order and law. That is certainly no healthy state of conditions in which every policeman or government official is looked upon as an enemy to society at large, who has to be resisted and hindered in the execution of his office as much as possible. I should not like to be among strikers in Germany, while our strikers here limit themselves to a special kind of mischief as the occasion may demand, but are otherwise law-

abiding and harmless. He who does not provoke them, may feel perfectly safe among them. It is better after all to let matters take their course until the interference of the authorities becomes absolutely necessary, for thus alone public opinion can be tested, and thus alone can we learn whether and to what extent strikers are deserving of the people's consideration and moral assistance."

One of our fellow-travellers, who had kept quiet for a long time, burst out, "The leader of the strike ought to be indicted, for although he pretends to keep within the bounds of the law, he suffers the men who obey him to trespass the laws." "Very true," said a companion of the speaker, "the leaders of the strike are the very opposite of the anarchists who were sentenced to death. The anarchists preached anarchy and revolution, but did not partake in revolutionary proceedings, for they did not throw the bomb, while the leaders of this railroad strike preach peace and law but induce their followers to practise revolutionary acts. The strike is considered a great success at the headquarters of the strikers; but their leader is still an unexperienced man in such matters. His overconfidence will soon give way to a bitter disappointment. In my opinion, the strike is lost; for the many acts of violence, committed all over the country, will without fail doom it. We may congratulate ourselves that we were not killed in this derailment, but the strikers, too, may congratulate themselves that not more harm is done in the various other happenings of the same kind. For they will, as the intellectual authors, be held responsible for it, even if they were not guilty of it."

There were more than twenty deputy marshals and deputy sheriffs on the train. One of the former explained to a passenger the situation, saying that the marshals' business was merely to protect the mail, other disturbances that might happen did not concern them. "I see, I see!" the passenger said, and walking away with his friend he said, "Uncle Sam is determined to protect the United States mail, but he does not bother about the United States citizens, that is a matter of State administration. A labor-dictator may with impunity impede passenger trains if he only allows the letters to pass on. Paper is of greater weight to him than human lives, because it belongs to the federal department and the free movements of citizens is purely private business."

There was some hope of the train's moving on. The passengers were ordered to resume their seats and the deputies cleared the ground of the strikers. But no help could be procured to move the wrecked engine. The orders from the headquarters of the road in Chicago were unsatisfactory. The strikers did not allow trains to return, and even stopped a train conducting fifty more deputies destined to preserve the peace in the road's yard at Blue Island.

It had become night and the passengers had taken their seats in the cars, when suddenly all the electric lights were extinguished. The strikers had called on the men in the electric plant and plied them until they joined them from sympathy and quit work.

When the night had advanced, our conductor passed through the car and said, "ladies and gentlemen, make yourselves as comfortable as you can. We shall not leave the spot before morning." "And shall we move on?" asked several voices. "At early daylight we shall pull out, if we can," he rejoined and left us to ourselves.

Now at last we knew something definite about our fate for the next few hours and everybody tried to make his bed the best he could. There was much fun and good humor. One gentleman began to snore; another one had lost one of his shoes and suspected his friends of having stolen it, others demanded that the lights be turned low while still others claimed that they wanted to read. The most law-abiding passenger was undoubtedly an eleven months old boy—a marvel of a baby. He did not cry and slept quietly amid all the confusion. His poor mother sat up at his side all night, and when the morning dawned tried to get breakfast in the dining-car of the train behind us. But in vain; the car, although the property of the Rock Island Road, was built at Pullman's and the strikers allowed them no water. So the mother had to go without coffee, and, having the baby, she did not venture to go into town to get something to eat and to drink.

When the morning dawned the situation was as hopeless as ever. The wrecked engine stood on the same place, and trains could move neither forward nor backward. The inconveniences increased. The ice-water in the cars was gone, and the people clamored for wash-water and for breakfast. The news from the city increased the excitement, for it was stated that the whole road was tied up, and if the train could get out here, it would meet with the same fate again before it reached Joliet. Under these conditions I thought it wisest to walk back to the next street-car connexion with Chicago. Blue Island lies sixteen miles south of Chicago, and the nearest street-car conveyance was at a distance of about two miles, in New Pullman. There was a rumor that the street cars had been tied up too, but there was no probability of it, and, luckily, it proved false. Two gentlemen joined me, but the mass of the passengers stayed, hoping for release in some shape from somebody. In New Pullman we found the electric cars running. We took breakfast in an inn at the wayside. The host offered us his bathroom for a morning wash and charged no extra price.

The papers of Chicago contained the news of an almost universal tie-up of the roads. Yet I was lucky still. I could go via Mendota on the Burlington Road, which was not touched by the strike and even carried its Pullman cars without being molested.

I have frankly told what I have seen and heard, not because I agree with all the opinions which I had occasion to listen to, but because the solution of the social troubles which surround us at present depends, I might say, exclusively on the public. The sympathy of the people is the ultimate court of appeal before which the quarrels of various classes of society are to be decided.

The boycott of Pullman has become a matter of secondary considaration. The present revolts and strikes are represented by the strike leaders as unavoidable means only to a greater end; and the ultimate aim finds expression in resolutions passed at a meeting in Uhlich's Hall, "that some day in the near future the revolt will be more sweeping, not economically alone against a few masters, but politically against the whole master class, wresting from them the control of the law-making power, the control of the police, militia, and the courts, which in all cases have been arrayed against the workers."

Strikes have been sanctioned, and the question is only whether and to what extent shall strikers be allowed to interfere with the rights of other people in order to render their strikes effectual. It is a question of power. The ultimate basis of all established law is the common will of the people. If such labor unions as the A. R. U. represent the common will, although they form a very small fraction of the people, they can make the law and establish the dictatorship of their leaders. Power can establish right, but whether the new right would be an improvement upon the old right is very doubtful.

We love progress, but here is a side-switch which endangers liberty; and liberty so far has given the best guarantees of being the soundest and most practical principle in social economy. P. C.

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